This section includes the following five subsections:

- 3.1 The IFR Requirements for Capability Assessments
- 3.2 US Virgin Islands Policies, Programs and Capabilities
- 3.3 Funding
- 3.4 Analysis and Evaluation of US Virgin Islands Departments, Agencies and Authorities
- 3.5 Summary and Recommendations

3.1 THE IFR REQUIREMENT FOR CAPABILITY ASSESSMENTS

The Interim Final Rule (IFR) includes two specific requirements for conducting capability assessments as part of Standard State Hazard Mitigation Plans:

- **State Capability Assessment** per **Requirement §201.4(c)(3)(ii): "[***The State mitigation strategy shall include a] discussion of the State's pre-and post-disaster hazard management policies, programs, and capabilities to mitigate the hazards in the area, including: an evaluation of State laws, regulations, policies, and programs related to hazard mitigation as well as to development in hazard-prone areas [and] a discussion of State funding capabilities for hazard mitigation projects*"
- **Local Capability Assessment** per **Requirement §201.4(c)(3)(ii): "[**T*he State mitigation strategy shall include] a general description and analysis of the effectiveness of local mitigation policies, programs, and capabilities…"*

The Disaster Mitigation Act of 2000 (DMA 2000) requires that the territories of the United States, including the US Virgin Islands, meet the IFR requirements for States. However, the US Virgin Islands differs from the 50 States in one important way. Although the islands of St. Croix, St. John and St. Thomas could be considered as distinct "communities" in many regards, there are no incorporated units of local government. Since there are no incorporated counties, municipalities or subunits below the Territorial government that can promulgate or enforce "local" policies, programs or regulations, the requirement for a "Local Capability Assessment" does not apply and is not addressed in this Plan.

3.2 US VIRGIN ISLANDS POLICIES, PROGRAMS AND CAPABILITIES

An important purpose of this assessment is to identify the capabilities that need to be strengthened to assure successful implementation of programs, and the rules and regulations intended to support the hazard mitigation related policies of the US Virgin Islands.

The remaining portions of this subsection of the Plan address:

- Policies
- Programs, Rules and Regulations

3.2.1 KEY WORD DEFINITIONS

The IFR does not provide definitions for key words in its requirements, i.e., "*policies, programs and capabilities*". For the purposes of this assessment, the following definitions will be used:

- *Policies* – are statements included in the Territory's plans or enabling legislation that express the vision or intent of the US Virgin Islands government. In the specific context of this plan, policies are identified that already do, or feasibly can, support hazard mitigation in the US Virgin Islands.
- *Programs* – are related, coordinated activities by one or more agency that have a distinct focus or purpose. Often, programs are developed as a direct response to policies and are enabled by the corresponding legislation or executive order. In the context of this assessment, relevant programs are often directly linked to rules and regulations.
- *Capabilities* – as used in this document, describe the past performance and future potential of agencies to carry out programs. As a simple example, if you want to build a house (the "program"), you need to assess your capability to do so. You should look at the materials and tools you have or need to buy; the skills you have or can hire (carpenters, electricians, plumbers, etc.); and whether the money you have saved for the project will be enough.
- Under this definition and for this particular planning exercise, capabilities refer to the strength and weaknesses of rules and regulations ("tools and materials"), the adequacy of human resources to carry out administrative procedures and enforcement activities (the "skills" to implement the program) and the funds available to maintain operations and provide capital improvements (the "project budget").

3.2.2 CAPABILITY ASSESSMENT INTERVIEWS

For the Plan Update, the majority of capability assessment interviews involved representatives from VITEMA, DPNR, DPW and VI Housing Authority. The following list identifies the name, title and affiliation of US Virgin Islands officials interviewed during the capability assessment:

Department of Planning and Natural Resources:

- T. Stuart Smith, DPNR, Director of Planning
- Phillip Smith, DPNR STT, Director, Director of Permits

Virgin Islands Territory Emergency Management Agency
- Austin Callwood, Deputy Director
- Haldor Farquhar, Mitigation Chief,
- Joanne White, Grants Specialist

Virgin Islands Housing Authority
- Robert Graham, Executive Director,
- Lydia Hughes, Director of Modernization & Development
- Mrs. Monique Farrell, Construction Manager

Department of Public Works:
- Nicole Turner, P.E., , DPW STT, District Engineer

Other Agency Representatives Interviewed:
- Leonard Gumbs, Structural Engineer, FEMA CAO

3.2.3 POLICIES

This section provides a summary of plans, policies and legislation that lay out specific goals, objectives and policy statements that already do, or potentially could, support pre- and post-disaster hazard mitigation. The plans reviewed for the Plan Update include land use and environmental planning documents, specific hazard mitigation plans, and other emergency management plans. They are listed below:

Land Use and Environmental Planning Documents

- *Coastal Land and Water Use Plan* (see "Coastal Zone Management" under Section 2.3.1)
- *St. Croix East End Marine Park Management Plan*, VI Nature Conservancy and UVI for DPNR, Division of Coastal Zone Management (2002)
- *Coral Bay Watershed Management Plan: A Pilot Project for Watershed Planning in the USVI,* Center for Watershed Protection, (2008)
- *St. Croix East End Marine Watersheds Management Plan, USVI DPNR, NOAA, USDA NRCS (2011)*
- *USVI Zoning and Subdivision Code Update,* currently under development by Rutgers University and Duncan Associates, in conjunction with the Community Foundation of the Virgin Islands

Activities related to other areas or phases of emergency management were not evaluated for this Plan Update.

All Hazard or Hazard Specific Mitigation Plans

- Natural Hazard Mitigation Plan for the US Virgin Islands, David Brower, Esq. and Timothy Beatley, Ph.D., for VITEMA (1988)
- Mitigating the Impacts of Natural Hazards in the US Virgin Islands, Island Resources Foundation, for VITEMA (1995)
- Mitigating the Impacts of Natural Hazards in the US Virgin Islands, Island Resources Foundation, for OMB (1999)
- Virgin Islands Flood Hazard Mitigation Plan, Island Resources Foundation for VITEMA, funded by FEMA FMA grant (2000)
- Phase 4 Report, Earthquake Hazards Reduction Plan, Geoscience Associates, for VITEMA, funded by FEMA grant EMA-K-86-0055 (1987)

Emergency Management Plans

- US Virgin Islands Territorial Recovery Operations, Part II, Territorial Disaster Recovery Assistance Handbook on Federal Programs, VITEMA (1992)
- Disaster Management Guide for the US Virgin Islands. FEMA Region II CAO (2004)
- Hurricane Evacuation Study for the US Virgin Islands, Technical Summary, US Army Corps of Engineers for VITEMA (1994)
- WAPA Emergency Operations Plan, WAPA (2003)

These plans provide a solid base for the maintenance, development and pursuit of coordinated programs that can reduce the risk of damage and loss from natural disasters in the US Virgin Islands.

Comprehensive Planning

As highlighted in the 2005, 2008 and 2011 Plans, the *Comprehensive Land and Water Use Plan (CLWUP)* adhered to goals and objectives laid out in the "*Guidelines for the Development of a Long-Range Comprehensive Plan for the United States Virgin Islands*" adopted by Executive Order No. 333-1991 on May 17, 1991.

The *Comprehensive Land and Water Use Plan* (CLWUP) proposed to incorporate territorial-wide land and water use guidelines developed by the V.I. Department of Planning and Natural Resources (DPNR) into the Virgin Islands Code (V.I. Code). In 2005, a formal bill was proposed by V.I. Senator Richards (Bill No. 25-0209) which sought to amend title 29, chapter 3, Virgin Islands Code, to enact the "Virgin Islands Development Law of 2003". Bill No 25-0209, which sought to provide for a comprehensive land and water use plan for the U.S. Virgin Islands and also called for the revision of zoning districts on all islands of the US Virgin Islands.

The CLWUP was perceived by the Legislature and stakeholders as too restrictive to the economic development of the US Virgin Islands and the draft bill was held in abeyance in legislative committee. There are currently no long-range comprehensive or master plans in process for the US Virgin Islands. However, DPNR is in the process of developing zoning and subdivision code revisions, which will be in compliance with all existing legislation, and will hopefully provide a basis for the eventual development and adoption of a comprehensive land-use plan, as required by Territorial law.

The zoning and subdivision code revisions are being developed with the assistance of Rutgers University. This project includes the following components:

- Comprehensive update and modernization of existing zoning and subdivision codes
- Organization, layout, ease-of-use/administration
- Internal/external consistency
- Administration/procedural clarity & efficiency
- Strategic amendments to address identified issues and opportunities
- Introduction of form-based floating zone
- Urban design plan for areas in Charlotte Amalie

These revisions are anticipated to support the process of moving towards the development of long-range comprehensive plan. A number of sections of the draft zoning and subdivision sections have been presented to a review committee and interested stakeholders. As of May 8, 2014, DPNR anticipates that the revisions will be finalized over the next several months, at which time they will be presented to both the Territorial Legislature and the public.

These code revisions will address significant, current issues related to hazard mitigation, including erosion control and management of storm water runoff. The major elements of the code revision are anticipated to encompass both technical standards and performance standards. It is anticipated that the code revisions will be complete and adopted in time for future Plan Updates, and that more information regarding the specifics of the code revisions will be available at that time.

Other plans include policy-related statements that are more focused on specific hazard mitigation issues. Although outdated by the consolidation of hazard mitigation programs in the HMA Unified Guidance, the *US Virgin Islands Flood Mitigation Plan*, adopted in 2003, is still relevant today. The goals and objectives highlighted in the 2003 plan were reflected in this Plan Update and clearly support both pre- and post-disaster hazard mitigation activities for flooding, one of the key hazards for the US Virgin Islands.

As such, the foundations of these plans continue to provide a solid base for the maintenance, development and pursuit of coordinated programs that can reduce the risk of damage and loss from natural disasters in the US Virgin Islands. The extent to which the Territory has been successful in building on this base is discussed in the following subsections. After the descriptions of these programs, Section 3.5– Summary and Recommendations relates each plan's "policies", as well as the related programs, rules and regulations to the elements of the IFR requirements.

3.2.4 PROGRAMS, RULES AND REGULATIONS

This subsection describes relevant programs, rules and regulations of the US Virgin Islands. The discussion is organized by four main headings:

- Pre-disaster hazard mitigation;
- Post-disaster hazard mitigation;
- Other related programs; and
- Proposed programs.

3.2.4.1 Pre-Disaster Hazard Mitigation

Programs, rules and regulations that are focused primarily or substantially on pre-disaster hazard mitigation in the US Virgin Islands include:

- Floodplain Management;
- Coastal Zone Management; and
- Land Development Regulations (e.g., zoning; subdivision regulations; building codes).

3.2.4.1.1 Floodplain Management

Current pre-disaster floodplain management efforts in the US Virgin Islands are pursued through four interrelated programs:

- National Floodplain Insurance Program;
- US Virgin Islands Flood Map Modernization Program;
- US Virgin Islands Flood Hazard Mitigation Plan; and
- Flood Damage Prevention Rules.

National Floodplain Insurance Program

Through the National Floodplain Insurance Program (NFIP), FEMA provides Federal insurance for structures and their contents located in participating communities. The NFIP was enacted by the Federal government in 1968 to help reduce flood damage by regulating new development in flood prone areas and to provide flood insurance to the general public at reasonable rates to cover damages to buildings and their contents caused by flooding.

In order to participate and qualify their residents for flood insurance, communities must adopt minimum regulations governing floodplain development. For example, participating communities must prohibit new development in designated floodways that raises flood levels. In addition, the lowest floor of all new buildings in Special Flood Hazard Areas must be elevated to or above the height of the base flood elevation or "100-year flood". A third significant requirement is that subdivisions must be designed to minimize exposure to flood hazards. Added standards are imposed on communities where the flood hazard is compounded by coastal wave action or "V" zones as described in Section 4.2 – Hazard Identification and Profiles.

In June 2004, the National Flood Insurance Act (42 U.S.C. 4001 et seq.) was amended to introduce a mitigation plan requirement as a condition of receiving a reduced local cost share for activities that mitigate severe repetitive loss properties under the Flood Mitigation Assistance (FMA) and Severe Repetitive Loss (SRL) grant programs. The October 2007, Interim Final Rule established this requirement under 44 CFR §201.4(c) 93) (v) to allow a State to request the reduced cost share under the FMA and SRL programs if it has an approved State Mitigation Plan that also included an approved Severe Repetitive Loss Strategy (contained in Appendix C).

The US Virgin Islands has been a member of the NFIP since 1980. The Territory adopted NFIP-compliant floodplain management provisions in 1993. See discussion under "Flood Damage Prevention Rules" below for a description and evaluation of the rules and regulations enacted by the US Virgin Islands that help satisfy the statutory requirements associated with their NFIP participation. The program is administered by DPNR, Division of Permits. The Director of Permits is the designated NFIP Coordinator for the US Virgin Islands.

Evaluation / Assessment

The NFIP was an important impetus for the enactment of the US Virgin Islands Flood Damage Prevention Rules. In addition, the program has provided loss coverage for a significant number of properties. It is important to note that of the 2,061 policies that are currently in force (2/28/2014 policy data FEMA R2), approximately 225 cover "repetitive loss properties", properties that are currently insured for which two or more NFIP losses (occurring more than ten days apart) of at least $1,000 damage each have been paid within any 10-year period since 1978 (FMA, 2000). As of November 2010, following Hurricane Earl (FEMA Disaster Declaration DR-1939-VI), there were 250 repetitive loss properties in the NFIP database. Removing duplicate and other entry errors, along with three structures removed from the list through implementation of a FMA-funded hazard mitigation project (Note: these are the most current years for which NFIP and SRL data that was made available to VITEMA.)

The prioritization of mitigation activities to reduce the number of repetitive loss properties (through acquisition, elevation, etc.) is consistent with actions outlined in Section 5 of this Plan.

Also, in evaluating the impact of the current floodplain management program in the US Virgin Islands, three other issues are important to examine:

- NFIP policy coverage assessment – Using October 2007 data from the Flood Hazard Mitigation Plan, there were 2,535 policies with insurance coverage totaling $350,594,700 in the US Virgin Islands. This represents an addition of approximately 535 policies since the 2000 FMA Plan. The 2000 FMA Plan also reported that the results of reviewing aerial photographs of the islands indicated that as much as 10 percent of the Territorial housing units are located in the Special Flood Hazard Area. Given that there are at least 50,500 housing units in the islands, 10 percent would yield approximately 5,050 units within the SFHA. If that is the case, NFIP policies cover approximately one half of the total eligible properties. When you realize that this calculation does not include commercial properties and that a higher proportion of them are probably located in or near the SFHA, then the resulting coverage rate is most likely even less.
- Insurance claims -- Data compiled for the 2004 Map Modernization Business Plan indicate that, as of March 2004, there were over 2,400 policies in force and over 2,500 insurance claims in the US Virgin Islands, resulting in an average 1.05 claims per policy. As of October 2007, there were over 2,535 policies in force and over 2,783 insurance claims filed in the Territory, resulting in an average 1.11 claims per policy.
- Repetitive Loss Insurance claims – Since the inception of the Virgin Islands qualification for NFIP in 1980 through November 2010, two-hundred and twenty five (225) properties have been identified and validated as repetitive flood loss properties. The total number of properties identified and validated as severe repetitive losses is three (3), making it a very small subset of the whole. The distribution of these properties is as follows:
    - St. Croix: 133 Repetitive Loss; 3 Severe Repetitive Loss
    - St. John: 2 Repetitive Loss
    - St. Thomas: 112 Repetitive Loss

  The figures above represent two hundred and fifty (250) total properties initially identified as repetitive loss or severe repetitive loss. Of these two hundred and fifty (250) identified properties, two hundred and twenty five (225) were later validated by FEMA. The twenty-five (25) that were removed from the list consisted primarily of duplicate entries, with others being mitigated properties or vacant lots.

  These repetitive loss and severe repetitive loss properties have filed six hundred and seventy (670) claims in the previous thirty (30) years, and have received payments of $33,417,083.88. This produces an average claim of $49,876.24 per property, or an average of $1,662.54 per property each year for the previous thirty (30) years.

The relationship of the number of policies versus claims is overly simplistic, and likely does not accurately depict the flood risk to properties in the Territory. Nevertheless, the increasing number of claims is disconcerting and may indicate the need for more careful development review and long-range comprehensive planning. The Territory has a substantial opportunity to address and take positive action relative to reducing the number of Repetitive Flood Loss properties. This Plan Update outlines specific actions (See Appendix G) to target these properties and the surrounding environ that perpetuates these losses.

Simple measures in the development review process have potential to pay dividends in reducing future flood-related disaster damages. Care should also be taken to make sure that well intentioned programs like the NFIP are focused on providing coverage for properties that are already at risk, not to support the development of new sources of risk and loss for the community.

Flood Insurance Rate Maps (FIRMs)

The NFIP issues Flood Insurance Rate Maps (FIRMs), which delineate the Special Flood Hazard Areas (SFHA) as either A-zones (riverine flooding) or V-zones (coastal flood hazard areas). The FIRMs, which have been utilized in the Virgin Islands since their initial issuance in August 1980, have served a useful purpose for establishing insurance rates.

The 2000 Flood Hazard Mitigation Plan provided a detailed analysis that documents extensive coastal and riverine flood damages outside of the regulatory SFHA boundaries. These maps have been updated and reissued in April 2007 and provide the Territory with a more useful resource for planning and site specific decision making.

The 2007 *US Virgin Islands Digital Flood Insurance Rate Maps (DFIRMs)* are consistent with the proposed five-year strategy for modernizing FEMA FIRMs and Flood Insurance Studies (FISs) in the Territory. The March 2004 strategy stated: "*Because of the steep terrain on all three islands, there is also a need to update riverine studies in US Virgin Islands. Many of the riverine flood hazards are currently shown on the FIRM as approximate floodplains, which do not provide enough detail to properly mitigate risk and provide sound floodplain management. To better manage development in these areas, US Virgin Islands requests that all the riverine flood hazards be studied in detail".*

Evaluation / Assessment

Metadata accompanying the USVI DFIRM database indicates that: *"The published effective FIRM and DFIRM maps are issued as the official designation of the SFHAs. As such they are adopted by local communities and form the basis for administration of the NFIP. For these purposes they are authoritative..."* (FEMA MSC, 2007). The data for the development of these maps is consistent with the "Guidelines and Specifications for Flood Hazard Mapping Partners" (FEMA, 2003). The DFIRMS are used as reference and to obtain more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the FIS report (FEMA,2007).

The DFIRM data has been provided to the US Virgin Islands in both hardcopy and as a GIS-enabled product, which is consistent with FEMA's goals of distributing DFIRMs as GIS data online for the population of US Virgin Islands.

Flood Hazard Mitigation Plan

In July 2000, the US Virgin Islands Territorial Emergency Management Agency (VITEMA) completed the *US Virgin Islands Flood Hazard Mitigation Plan,* which was subsequently adopted in

2003. This plan was developed to preserve the eligibility of the US Virgin Islands for project grants from FEMA's Flood Mitigation Assistance (FMA) Program.

The plan is based on goals and objectives that were detailed earlier in Section 3.2. The plan also outlines an extensive series of recommended mitigation measures, some of which have been implemented. These include:

- Traditional property protection (e.g., elevation of flood prone structures, flood proofing, etc.);
- structural mitigation measures (e.g., retention basins, levees or flood walls, etc.) for specific areas of concern; and
- Recommendations to improve emergency response and recovery actions (see more detailed discussion of this part of the plan under Section 2.3.2 – Post-Disaster Hazard Mitigation).

The *US Virgin Islands Flood Hazard Mitigation Plan* also recommended the updating US Virgin Islands FIRMs. This action has finally been implemented and the results are highlighted in the subsection above.

Evaluation / Assessment

The *US Virgin Islands Flood Hazard Mitigation Plan* (2000) plan has not been updated; in fact, there is no need to update this Plan, given FEMA's Unified Guidance for the Hazard Mitigation Assistance programs, final version dated February 14, 2014. By bringing all of the major hazard mitigation grant programs (HMGP, PDM, and FMA) under one combined and simplified grant process, there is no need for a separate Flood Hazard Mitigation Plan. In essence, this update of USVI Territorial Hazard Mitigation Plan, and all future updates, integrates flood hazard mitigation as one important component of an all-hazard perspective. The 2000 FMA plan included recommendations in two important areas.

- Regulation and Permitting - recognizing that existing rules and regulations governing flood hazard mitigation are of little value without adequate enforcement, the plan identified six different recommendations under this heading including:

    1. Adequately staff, train and equip regulatory agencies charged with issuing permits;
    2. Provide training and education for government officials, developers and residents;
    3. Add flood hazard mitigation criteria to Coastal Zone Management (CZM) permitting (see discussion below regarding the CZM Program);
    4. Designate the SFHAs as an Area of Particular Concern (see CZM);
    5. Strengthen implementation and enforcement aspects of zoning and subdivision regulations (see discussion below under Land Development Regulations); and
    6. Ensure strict enforcement of the US Virgin Islands Building Code (see Land Development Regulations).

- Watershed Management Approach – recognizing that "*the success of the Flood Hazard Mitigation Plan relies on its implementation*" and building on an established principal

strategy for controlling pollutant discharges in the US Virgin Islands under the §6217 Coastal Non-Point Pollution Control Program (see discussion below under Section 2.3.3 – Other Related Programs), the plan highlighted the benefits of implementation based on hydrologic units (watersheds or drainage basins). This approach would also be consistent with related efforts under the Unified Watershed Assessment and Restoration Priorities Program (see Section 2.3.3) and could increase the effectiveness and efficiency of all three programs.

The recommendations highlighted above are reflected in the programmatic actions of this Plan Update (see Section 5.3.2). Specific flood mitigation actions such as structural mitigation measures (e.g., retention basins, levees or flood walls, etc.) for specific areas of concerns are highlighted in Sections 5.3.3; 5.3.4 and 5.3.5. Also addressed are several proposed actions to develop hydrological and hydraulic analyses and watershed-based studies to address repetitive losses.

Flood Damage Prevention

The Territory adopted NFIP-compliant floodplain management provisions under Rules and Regulations on Flood Damage Prevention, Title 3. Executive Chapter 22, Department of Planning and Natural Resources, Subchapter 401(b)(15), VIRR on July 8, 1993. The Rules and Regulations apply only to the areas defined on the most recent FIRMs as the Special Flood Hazard Areas (SFHA). In these areas, a permit is required for any type of development procedure or change to the floodplain including excavation, dredging, filling, drilling, modification to existing structures and construction of new structures. The Rules and Regulations reference the appropriate provisions of Section 44 of the Code of Federal Regulations (44 CFR) as General Standards, but add a number of general and specific standards.

The Commissioner of DPNR is appointed to administer and implement the provisions of these regulations, and may request the assistance of other departments and agencies to provide technical assistance. Administration of the rules and regulations includes a number of responsibilities, which can be grouped according to the following categories:

- Permit application and plan reviews – to determine whether development can occur in proposed locations and if so, if the proposed development complies with the regulations and any established criteria,
- Field verifications and determinations – for flood elevations and to resolve ambiguities or disagreements regarding the locations of flood zone boundaries or determination of BFEs, and
- Monitoring compliance with approved permits and plans.

<u>Evaluation / Assessment</u>

Aspects of these standards that should be considered for revision or refinement in the context of this Plan are as follows:

- The basis for determining whether or not the Rules and Regulations are applicable to any particular permit application is based on information in the FIRMs, i.e., "*is the proposed activity in or out of the SFHA?*" It has been noted above that the FIRMs have been updated. The intention of the update is to provide the Territory with "more useful resource for planning and site specific decision making";
- Residential and non-residential construction in the SFHA must be built so that the lowest floor (including basement) is set at the base flood elevation [401(b)(15)(b)(1-2)]. Requiring additional freeboard (as little as one (1) foot above the base flood elevation) would significantly reduce the potential for damages from common storms without significantly increasing construction costs.
- In Coastal High Hazard SFHAs (i.e., V-zones), buildings must be constructed such that the lowest supporting horizontal members are located at the BFE [401(b)(15)(b)(5)(B)]. As noted in the preceding item, reductions in losses can be realized by increasing the "freeboard" requirements of this part of the Rules and Regulations.
- Demonstrations that flood elevations will not be increased by fill within the SFHA or encroachments on streams or guts without established base flood elevations or floodways are required but no specific procedures or evaluation criteria for these determinations are provided [401(b)(15)(c)].
- Subdivision provisions contain vague language such as "minimize flood damage" and "reduce exposure to flood hazards," but do not require (or even suggest) actual avoidance of construction in these areas other than excluding the floodway from subdivisions. The regulations could require avoidance with a provision where developers can attempt to demonstrate (with appropriate procedures and evaluation criteria) that avoidance is not reasonable or feasible. This would put the "burden" on the developers, not on the DPNR reviewers. Revisions to the subdivision regulations, currently in process, should help to clarify requirements to address storm water runoff and amounts of impervious coverage allowed.
- Subdivision provisions do not require that each lot include an area outside of the SFHA with adequate area to site buildings per zoning designation. As in the previous item, this could be a requirement with a provision for developers to demonstrate (with appropriate procedures and evaluation criteria) that such provisions are not reasonable or feasible.

In addition, relative to the Territorial Hazard Mitigation Plan, one of the key responsibilities of DPNR is to review and evaluate development permit applications, including making a determination as to whether or not development will take place in a flood prone area. Procedures for preparing permit applications for development in the floodplain are well defined in the regulations. In fact, most of the document is concerned with how to make development that is "destined" to occur in the flood hazard areas as flood proof or resistant as possible. Unfortunately, for the most part, the Flood Damage Prevention Rules and Regulations do not provide a strong basis for excluding development from high risk areas within the floodplain altogether.

3.2.4.1.2 Coastal Zone Management

The Federal Coastal Zone Management Act of 1972 included requirements for the States and Territories of the United States to develop a coastal zone management program. The US Virgin Islands Coastal Zone Management Act of 1978 became effective in 1979. The resulting US Virgin Islands Coastal Zone Management Program was prepared by the US Virgin Islands Planning Office (which has since been reorganized as DPNR) and submitted by the Governor to the US Department of Commerce.

The Program, as articulated in Title 12 VIRR, Chapter 21, §901-14, is based on a fundamental desire to preserve a significant environmental resource that benefits the economy and quality of life for the Territory's residents. Included with the Program's "findings and goals" (§903) are statements that directly relate to hazard mitigation including:

- "*there has been uncontrolled and uncoordinated development of the shorelines*…" [Title 12 VIRR, Chapter 21, §903 (a)(6)]; and
- "*improper development of the coastal zone and its resources has resulted in … erosion, sediment deposition, increased flooding, gut and drainage fillings*…" [Title 12 VIRR, Chapter 21, §903 (a)(6)]

In addition, §906 identifies a wide range of policies "applicable to the first tier of the coastal zone" that specifically reference hazard mitigation issues including development policy:

- "*to the extent feasible, discourage further growth and development in flood-prone areas and assure that development in these areas is so designed as to minimize risks to life and property*;" [Title 12 VIRR, Chapter 21 §906 (a)(9)],

and environmental policy:

- "*to … assure that activities in or adjacent to [complexes of marine resource systems … including reefs, marine meadows, salt ponds, mangroves and other natural systems] are designed and carried out so as to minimize adverse effects on … storm buffering capabilitie*s," [Title 12 VIRR, Chapter 21, §906 (b)(2)].

DPNR is the central territorial agency for administration of the Coastal Zone Management program in the US Virgin Islands. Other principal entities include the Office of the Governor, Legislature, the Department of Public Works and the Board of Land Use Appeals. The Coastal Zone Management Act created a Coastal Zone Management Commission within DPNR. A Division of Coastal Zone Management was also created within DPNR to assist the Commission and the Commissioner in administration and enforcement of the Act. There are three committees within the Commission, one for each major island. Each committee has authority over the administration of the Program within its "jurisdiction" including:

- issuance of Coastal Zone Management (CZM) permits;
- compliance with requirements related to Areas of Particular Concern (APC); and
- compliance with requirements related to the Coastal Barrier Resources Act (CBRA).

Coastal Zone Management Permits

The Coastal Land and Water Use Plan was approved and implemented as part of Title 12 VIRR, Chapter 21, §910. The Plan provides comprehensive guidelines for development of Tier 1 of the Coastal Zone.

Tier 1 is defined as the area extending from the outer limit of the territorial sea (including offshore islands) to distances inland as indicated on a set of maps. The Tier 1 area does not necessarily correspond to consistent physiographic characteristics or other regulatory boundaries such as the SFHAs, DPNR regulatory buffers (to wetlands, guts, and salt ponds).Tier 2 includes all other interior portions of the three major islands.

CZM permits are only required for development proposed in Tier 1. The appropriate committee of the Coastal Zone Management Commission or the Commissioner must find that "*the development as finally proposed incorporates to the maximum extent feasible mitigation measures to substantially lessen or eliminate any and all adverse environmental impacts of the development; otherwise the permit application shall be denied*." [Title 12 VIRR, Chapter 21, §910 (a)(2)]. It is also worth noting an important exclusion from the requirements for a CZM permit for existing structures as "*no coastal zone permit shall be required pursuant to this chapter for activities related to the repair or maintenance of an object or facility located in the coastal zone, where such activities shall not result in an addition to, or enlargement, or expansion of such object or facility."* [Title 12 VIRR, Chapter 21§903 (b)(1)]

In addition, the Coastal Zone Management Act made provisions for two different levels of permits; major and minor, which are administered with slight differences for land and water based projects. Major permits incorporate the requirements of the zoning use permit; the earth change permit, shoreline alteration and submerged lands permit (see discussion of Land Development Requirements below). In addition, Environmental Assessment Reports (EARs) are required for major and minor water projects and for all major land projects in Tier 1. The EARs include requirements for submittal of information regarding:

- Climate and weather conditions including potential impacts resulting from wind, wave and flooding;
- Landforms, geology and soils;
- Drainage, flooding and erosion control;
- Oceanography;
- Marine resources;
- Terrestrial resources;
- Wetlands;
- Rare and endangered species; and
- Air quality.

As detailed in Title 12 VIRR, Chapter 21, §910 (c), major permits are required for all development except:

- "*a development which is to be conducted completely or substantially seaward of the line of mean high tide*" but meeting definitions of permissible activities established by the appropriate committee of the Commission (e.g., navigation buoys, moorings for vessels, etc.);
- construction of one or two single-family residences;

- construction of a duplex;
- improvements to an existing structure below an established cost threshold (currently set at $94,000);
- the development of one or more structures valued in their entirety below a threshold (currently set at $136,000);
- any other development, except the extraction of minerals, valued below a threshold ($120,000); and
- the extraction of minerals valued below the current threshold ($31,000).

In addition, a major permit is not required for subdivisions. For all these activities excluded from the major permit, a minor permit is required but the requirements for submittal and approval are correspondingly weaker. In particular, as noted above, EAR's are not required for minor permits. However, there is a provision in Title 12 VIRR, Chapter 21, §910 (c)(2)(E), that "*if the Commissioner, upon reviewing any minor permit application …, determines that the proposed activity is likely to have significant adverse environmental consequences he shall, upon giving notice to the applicant, forward such application to the appropriate Committee of the Commission for review as a major coastal zone permit*."

Evaluation / Assessment

The CZM permit can be an important part of the process of protecting coastal resources and reducing the impacts of natural hazards on people and property. However, there are inherent weaknesses in the systems that need to be addressed to provide consistent and meaningful hazard mitigation results in the Territory, including:

- The Virgin Island Coastal Zone Management program faces increasing pressure to make decisions regarding competing demands for tourist development, protection of existing threatened properties and the rights of private property owners. The relative small size of the islands, the essential connection between the coastal resources and the watersheds that lie above them and the magnitude of the natural hazards that the islands are subjected to, all make a strong argument that the Coastal Zone and Coastal Zone permits should be extended. At a minimum, all development throughout the Territory should be reviewed at the same level of scrutiny as those permit applications in Tier 1. If the CZM permit system were consistently and aggressively administered, it could provide the appropriate information regarding potential impacts of proposed development on the built and natural elements of the islands and in turn, the impacts of natural hazards on the proposed development.
- In addition, excluding subdivision from review as a major permit activity (in essence, bypassing the requirements for EARs) substantially weakens the system. By not requiring an environmental assessment and an accounting of the impacts of natural hazards on the proposed development, the potential for inappropriate development in the floodplain is greatly increased. By the time permit applications come along for construction of improvements to deeded lots, they only cover pieces of the overall land development project and may not, in and of themselves, be deniable. It is hoped that the revisions to the subdivision and zoning codes that are currently underway may serve to at least

partially remedy this deficiency, though that remains uncertain as of the development of this Plan Update.

- It is important to reiterate that the focus of the EAR's is the impact of the proposed development on the site and adjacent features with only passing emphasis placed on the potential impact of the site and its conditions on the proposed development. To be most effective, the existing EAR requirements need to be revised to include specific references (and threshold criteria of benefits and costs) to assessing vulnerability and estimating potential losses to property from natural hazards as well as the cost of emergency response and recovery operations attributable to the proposed development.

The NOAA *Final 312 Evaluation Findings of the Virgin Islands Coastal Zone Management Program* reiterated concerns about development and earth change in Tier 2 in which erosion and sedimentation is *"one of the major impacts to coastal water quality and to the long term health of the Territory's coral reefs*" (NOAA, 2003). The report goes on to indicate that situation is a very complex issue to resolve, especially on St Thomas and St. John, where a majority of land occur on slopes greater than 25%.

One of the positive aspects of the VICZMP is that a mechanism already exists for initiating the changes to the CZM process. Title 12 VIRR, Chapter 21, §912 (b) identifies a requirement for "continued planning", which states: *"[t]o ensure that the provisions of this Chapter are regularly reviewed and the recommendations for revisions of, or amendments to, the Virgin Islands Coastal Zone Management Program will be … developed, …and to provide for continued territorial coastal planning and management, the Virgin Islands Planning Office [now DPNR] shall undertake on a continuing basis such activity and research as is necessary to maintain a continued involvement in the coastal zone management process…*". This provides DPNR with the ability to make recommendations for amendments that could accommodate the recommended changes in the requirements and process.

It is necessary to note that the VICZMP has initiated changes to rules and regulations in 2006. The 2006 revisions, which are currently under review, do not refine or expand the extent of the coastal zone and/or redefine permit review or CZM commission procedures. The 2006 revisions to the rules and regulations introduce changes to administrative processes and introduce new permit fees.

Areas of Particular Concern

The Coastal Zone Management Act defined Areas of Particular Concern (APC) and established criteria for selection in 15 CFR Part 923. The process should include the development of a management plan for each designated area. In part, the management plans are intended to make provisions for acceptable levels of future land development that in turn can be used to revise the zoning designations in these areas. As a result, a formidable tool is available through the APC management plans to set direction for development in these areas in advance of permit applications – i.e., taking a proactive versus reactive approach to land use and hazard mitigation. To date, eighteen areas have been designated as APCs in the US Virgin Islands. At this time of this Plan Update, draft management plans have been developed for three areas.

Evaluation / Assessment

While there is legislation in place for review of development activities in the APCs, the process will still depend on having approved management plans in place. Only a few management plans, such as the *St. Croix East End Marine Park Management Plan* (approved in 2002), have been implemented. In recent years, efforts to develop new APC plans have faded away from being a priority at DPNR agenda. The NOAA *Final 312 Evaluation Findings of the Virgin Islands Coastal Zone Management Program* have found many problems in the existing APC program and indicated that many of the APC "goals are so broad that a focusing and prioritization of goals and objectives may be necessary for the Territory to move forward with meaningful implementation". It also cited that the implementation of many of the goals rely on various territorial agencies and called for the development of a clear strategy that prioritizes APC plan development and seeks to identify partners within Territorial agencies for the implementation.

Coastal Barrier Resource System

The Coastal Barrier Resources Act (16 U.S.C. 3509) (CBRA) was enacted in 1982 and established the Coastal Barrier Resources System (CBRS). The Act states that in the resulting designated areas along the Atlantic and Gulf of Mexico coastlines, *"most federal expenditures are no longer available to promote economic growth or development".* 35 different coastal areas in the US Virgin Islands, covering a total of 130 miles of the coastline and hundreds of acres of sensitive landscapes, are included in the designations.

Protection of significant areas of the coastal system have been realized although development activity in some of the watersheds have contributed to (and will continue to do so if unchecked) degradation of the resources.

Evaluation / Assessment

Protection only extends to the actual coastal barrier resource in question and not to the watershed that can adversely affect the resource. This could be addressed through more aggressive implementation of a watershed approach to land use planning, and both the quality and quantity aspects of storm water and floodplain management.

3.2.4.1.3 Land Development Regulations

Land development regulations play an essential role in an integrated coordinated program of hazard mitigation. By controlling where and how development occurs, major problems can be lessened or avoided. Also, as properties are redeveloped or rebuilt, strong regulations can ensure that the replacement or repaired structures are better able to resist damage from future events.

In the US Virgin Islands, there are three main elements to the land development regulations including:

- Zoning;
- Subdivision Regulations;
- Building Codes; and

- Building Permits.

Zoning

US Virgin Islands zoning law is based on VIC Title 29, Chapter 3, Subchapter 1. The code divides all the islands into various land and water based districts as tabulated below:

TABLE 3.1 ***Zoning Designations***

Zoning Category	Percent of Total Area
St Croix	
Low Density Residential	54
Agricultural	25
Medium Density Residential	7
Industrial	5
Waterfront - Pleasure	2
Business / Commercial	1
Public and Other	6
St. John	
Low Density Residential	42
Medium Density Residential	3
Industrial	<1
Waterfront - Pleasure	2.5
Public (National Park) and Other	52
St Thomas	
Low Density Residential	70
Agricultural	<5
Industrial	<5
Waterfront - Pleasure	4
Public and Other	15

Evaluation / Assessment

By prohibiting or regulating development and redevelopment in hazard prone areas, zoning can be an effective means to eliminate or reduce the risk of loss of life and property damage. This is most relevant to hazards that have defined geographic extents such as flooding. Comparing the results of the hazard profiling and risk assessment from this study with the existing zoning map would help identify areas where potential development may be in harm's way. This could lead to revisions in the map that provide a better match between the suitability of the land for development and the type and intensity of use proposed.

Creating and implementing a revised zoning map that includes substantial reductions in development capacities in hazard prone areas will have immediate results in limiting future losses. Zoning can also be used to reduce density in existing developed areas. By down-zoning (i.e., reducing allowable development densities and intensities), non-conforming uses will be established. Like the current system, these uses will persist until such time as the property owners request permits for substantial changes to the property or the property is substantially improved or damaged (i.e., at a level greater than 50 percent of its value). In these cases, provisions can take effect that reduces hazard vulnerability and / or the property cannot be redeveloped.

DPNR is in the process of revising the US Virgin Islands zoning regulations. The current revisions do not change the zoning map or zoning designations, but will serve to bring the zoning code up to current standards and provide more flexibility in development review procedures by reducing the need for extensive use of variances. The revisions should be ready for public and legislative review and comment by early summer 2014, and is intended to create a more streamlined, enforceable zoning process. It is DPNR's intent, based on the recommendations of the Rutgers and Duncan Associates study (discussed earlier in this section), to draft and adopt new land use and zoning legislation that defines a set of prescriptive rules and regulations to support the existing land uses and to promote the desired future development patterns in order to maintain the health, safety and welfare of the community over time.

Subdivision Regulations

The main issues related to the subdivision regulations in the US Virgin Islands (as contained in Title 29, Chapter 3, Subchapter 231 of the VIC) are as follows:

- Minor division of land (i.e., development proposals with less than 4 lots) is not considered a subdivision under the US Virgin Island Code and is reviewed by the Chief Surveyor, working under the Lt. Governor's Office. While there are some requirements addressing flood prevention, there are no clearly enforceable complimentary storm water management provisions for these minor subdivisions. However, in the aggregate, all development on a relatively small and closed system like the US Virgin Islands will have some level of impact on storm water runoff and, therefore can detrimentally influence the effectiveness of programs intended to reduce non-point source pollution, protect coastal resources, and mitigate flooding.

- Subdivisions with 4 lots and greater are reviewed by a representative of the DPNR, Division of Comprehensive and Coastal Zone Planning (CCZP). However, for subdivisions in Tier 1, the applicant only needs to address the requirements for a minor CZM permit. The problems with this approach have been discussed previously under the CZM Program section. With no set review criteria, no substantial storm water management regulations, and no formal process for bringing in environmental expertise from other relevant DPNR divisions, it is difficult to influence the way development is planned and implemented in the US Virgin Islands to reduce exposure and risk.
- Basic engineering practices related to land development need to be better incorporated into the subdivision regulations. For example, under the current regulations, it is possible to build roads in the Special Flood Hazard Area with elevations up to two (2') feet below the regulatory flood elevation. In practice, what this can and does result in is the road becomes a conveyance for storm water, promoting unsafe conditions and promoting damage to the roadway that must be repaired by the Territory after major storm events.
- DPNR can take greater advantage of innovative subdivision design and siting techniques than currently allowed under the existing subdivision regulations or proposed revisions by requiring or providing better incentives for cluster development, open space preservation, density-bonuses, setbacks, overlay zoning techniques (described earlier), and special considerations for developments in coastal high hazard areas (for more information on these innovative techniques the interested reader is referred to the FEMA/APA Planning Advisory Service Report # 473 entitled, Subdivision Design in Flood Hazard Areas, 1997).

It is necessary to note that DPNR and the Division of Environmental Protection has implemented a regulation requiring all applicants submitting documents and plans for construction or earth change permits, for developments one acre or greater, to submit a storm water prevention plan. The storm water prevention plan must take into account pre-existing hydrology as well as postulate on post construction run-off. The storm water prevention plan must also clearly indicate how mitigation measures will be introduced in the site design. This action has potential to be an effective strategy to ensure that surface run-off does not exceed pre-existing conditions and may assure that future development does not exacerbate flooding in downstream areas.

At the time of this Plan Update, the subdivision regulations were in the same revision process as the zoning codes. These revisions should also be completed by mid-2014, and are also expected to produce subdivision regulations that are easier to understand, interpret and enforce, that incorporate new technology and new ways of thinking about subdivision zoning, and that create a path for the development of a comprehensive land use plan, which does not currently exist in the US Virgin Islands.

Building Codes

An effectively administered and enforced building code can literally save lives. For current use the US Virgin Islands has adopted and enacted the International Construction Standards. These include:

- International Building Code (IBC) - Pertains to the construction of commercial and multi dwelling buildings.
- International Residential Code (IRC) – Regulates the construction of single and two family dwellings.
- International Mechanical Code (IMC) – Establishes standards for electrical, plumbing and air quality systems.
- International Energy Conservation Code (IECC) – Pertains to the standards for energy efficient structure construction

These codes established by the International Code Council contain specific references to hazard mitigation. A consistent enforcement of these construction codes should result in a significant reduction of property loss especially from the hazards of windstorm, earthquake and fire.

Evaluation / Assessment

The implementation of the IBC, while a good step for the Territory, has met mixed results. In the evaluation for the Plan Update, DPNR has indicated that the local developers and architects have adopted and followed the IBC guidelines fairly well. The implementation of the IBC has fallen short; however, due to staff limitations and lack of resources. This area needing improvement is discussed further in the following sub-section.

Building Permits

A measure of the enforcement of building codes is the number and type of building permits issued. The following tables illustrate the number and type of building permits issued and inspections performed throughout the USVI from FY2008 – FY2010, as well as the estimated value of new construction resulting from these permits and inspections.

TABLE 3.2 ***Building Permit, Inspection and New Construction Data - FY2008***

Permit Applications	St. Thomas Received	St. John Received	St. Croix Received	Total Received	STT/STJ Approved	STX Approved	Total Approved
Flood Plain	1	0	35	36	1	40	41
Plan Review	299	105	528	932	262	315	577
Demolition	8	1	22	31	5	23	28
Building	475	84	410	969	226	312	538
Plumbing	211	63	300	574	206	285	491
Electrical	422	68	487	977	422	445	867
Use and Occupancy	156	69	252	477	263	237	500
Sign	2	0	0	2	1	0	1

Site Inspections	St. Thomas Requested	St. John Requested	St. Croix Requested	Total Requested	STT/STJ Approved	STX Approved	Total Approved
Flood Plain	1	0	26	27	1	14	15
Plan Review	106	41	55	202	108	59	167
Building	1035	558	1105	2698	1496	1089	2585
Plumbing	339	237	712	1288	519	749	1268
Electrical	615	243	830	1688	858	1125	1983
Violation	84	2	46	132	82	46	128
Site Visit	1003	84	73	1160	1182	113	1295

Estimated Construction Cost	St. Thomas	St. John	St. Croix	Total
New Construction	$137,567,534	$18,460,796	$92,301,398	$248,329,728

TABLE 3.3 ***Building Permit, Inspection and New Construction Data – FY2009***

Permit Applications	St. Thomas Received	St. Thomas Approved	St. Thomas Issued	St. John Received	St. John Approved	St. John Issued	St. Croix Received	St. Croix Approved	St. Croix Issued
Flood Plain	0	0	0	0	0	0	27	33	26
Plan Review	158	118	91	55	40	38	509	432	388
Demolition	11	6	5	0	0	0	29	28	24
Building	418	256	180	75	22	18	485	457	391
Plumbing	215	167	220	50	29	20	335	225	221
Electrical	401	317	171	56	43	29	409	424	411
Use and Occupancy	153	147	135	46	39	39	247	210	188
Restoration (Hurricane)	0	0	0	0	0	0	10	10	0
Total	1356	1011	802	282	173	144	2041	1809	1649

Inspections	St. Thomas		St. John		St. Croix	
	Received	Performed	Received	Performed	Received	Performed
Flood Plain	0	0	0	0	3	0
Plan Review	119	131	45	32	39	39
Building	842	1112	445	419	1099	782
Plumbing	313	280	220	229	676	695
Electrical	545	746	316	299	970	1411
Violation	153	172	8	7	22	80
Site Visit	1213	1507	31	40	44	44
Restoration	0	0	0	0	21	20
Total	3185	3948	1065	1026	2874	3071

Estimated Construction Cost	St. Thomas	St. John	St. Croix	Total
New Construction	$63,989,406	$6,358,632	$124,472,981	$194,821,018

TABLE 3.4 ***Building Permit, Inspection and New Construction Data – FY2010***

Permit Applications	St. Thomas Received	St. Thomas Approved	St. Thomas Issued	St. John Received	St. John Approved	St. John Issued	St. Croix Received	St. Croix Approved	St. Croix Issued
Flood Plain	0	0	0	0	0	0	11	16	15
Demolition	14	5	4	3	3	3	35	39	33
Building	355	251	213	54	44	30	469	432	418
Plumbing	152	158	93	23	22	12	262	256	240
Electrical	315	275	181	54	46	31	490	449	437
Use and Occupancy	148	151	142	30	34	32	273	262	226
Total	984	840	633	164	149	108	1540	1454	1369

Inspections	St. Thomas		St. John		St. Croix	
	Received	Performed	Received	Performed	Received	Performed
Flood Plain	0	0	0	0	0	0
Building	807	883	633	587	1175	996
Plumbing	307	315	192	181	667	632
Electrical	601	599	202	202	987	1204
Violation	77	77	16	16	20	19
Site Visit	693	693	55	55	39	39
Total	2485	2567	1098	1041	2888	2890

Estimated Construction Cost	St. Thomas	St. John	St. Croix	Total
New Construction	$63,328,779	$8,426,109	$92,917,843	$164,672,730

Evaluation / Assessment

As evidenced in the tables above, the total value of new construction in the USVI declined significantly from FY 2008 through FY 2010. Approved building permits also declined significantly during this three year period; dropping by 120 from 538 approved permits for FY 2009 (22% decline). Although similar data is not readily available for the past three years, it is assumed that a similar pattern of decline occurred due to recent economic conditions on the islands.

DPNR lacks the appropriate staff and resources to resolve technical challenges, particularly in areas of development plan review and enforcement. Adequate staffing is a serious impediment to the effective implementation of the program. In addition, the department could benefit greatly from an investment in GIS technology and staffing, dedicated to facilitating the permitting and review process. Such an investment could also serve to monitor hazard mitigation concerns related to permitting, including permit location within the SFHA and identification of steep grade or seismic concerns.

3.2.4.2 Post-Disaster Hazard Mitigation

Programs, rules and regulations that are focused primarily or substantially on post-disaster hazard mitigation in the US Virgin Islands include:

Emergency Management Council
The Emergency Management Council was established by Executive Order Number 304-1987 under the US Virgin Islands Code (Title 23, Chapter 12, Section 1126a). The order established the Council which sets the basic framework for the Territory's participation in the Federal Disaster Assistance Program.

Flood Hazard Mitigation Plan

The Flood Hazard Mitigation Plan (completed in 2000 and adopted in 2003) was discussed previously as part of the pre-disaster hazard mitigation programs in the US Virgin Islands. The Plan also includes a number of recommendations that are intended to improve the post-disaster hazard mitigation related capabilities in the Territory including improved flood forecasting / disaster warning systems, disaster preparedness and post-flood recovery activities.

FEMA Disaster Management Guide

The FEMA Disaster Management Guide for the US Virgin Islands, FEMA Region II CAO (2004) provides the broad comprehensive disaster management guidance that is still pertinent today.

3.2.4.3 Other Related Programs

Programs, rules and regulations that have provisions or aspects that could support hazard mitigation in the US Virgin Islands include:

Unified Watershed Assessment and Restoration Priorities Program
The DPNR, in cooperation with the US Department of Agriculture and its Natural Resources Conservation Service has developed the Unified Watershed Assessment Report pursuant to the Territory's Clean Water Action Plan. An important element of the Action Plan is to undertake a cooperative process for restoring and protecting water quality on a watershed basis. DPNR identified problem watersheds that were not meeting, or were in danger of not meeting, clean water or other natural resource goals. The assessments were prepared using existing information and were a collaborative effort between local government, federal land management agencies, conservation districts and land conservation departments, non-governmental and private organizations and other stakeholders.

The watershed approach and the collaborative model for public and private partnerships would be conducive to much of the work that needs to be done to implement a comprehensive hazard mitigation strategy. However, the implementation of these programs has been stymied by lack of adequate staffing and resources. Enforcement of erosion and sediment control should become priorities for DPNR, particularly as it relates to reducing surface run-off and flood hazard reduction along with water quality protection.

Environmental Programs

In a similar manner, various efforts of the Territory, including:

- Non-Point Pollution Control Program;
- Sediment Reduction Program; and
- Protection of Endangered Species,

All have aspects that can and should be coordinated with an overall effort to promote hazard mitigation. As more and more elements of the Territory's planning efforts become integrated, the result will be increased effectiveness and efficiency of the programs, as well as, increased sustainability for the Territory.

3.2.4.4 Proposed Programs

No major new proposed programs were identified that are currently underway during the development of this Plan Update that has direct relevance to VITEMA hazard mitigation program elements.

3.3 FUNDING

3.3.1 FEDERAL FUNDING

Section 2.4 of this Plan Update identified some of the key programmatic changes to FEMA's hazard mitigation programs over the past three years; this section provides additional details on how these changes would affect future funding of hazard mitigation in the Territory. Clearly, the Territory should take maximum advantage of HMA grant programs in both pre- and post-disaster settings.

For the purposes of the Plan Update, the following description of federal funding sources is limited to programs with direct or indirect relationship to hazard mitigation. Through the Federal Emergency Management Agency (FEMA), the Federal government has several programs to support hazard mitigation. These programs are federally-funded and are administered by the Virgin Islands Territorial Emergency Management Agency (VITEMA).

- FEMA Pre-Disaster Mitigation Program: The Pre-Disaster Mitigation (PDM) program is designed to implement cost-effective hazard mitigation activities that complement a comprehensive mitigation program. These include planning, acquisition, retrofitting, flood control projects, generators, and other projects. All applicants must participate in the National Flood Insurance Program (NFIP) if they have been identified through the NFIP as having a Special Flood Hazard Area. Only governments are eligible. PDM covers up to 75% of costs.
- FEMA Hazard Mitigation Grant Program: Authorized under Section 404 of the Stafford Act, the Hazard Mitigation Grant Program (HMGP) is funded by FEMA and administered by VITEMA, and provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to natural disasters and to enable mitigation

measures to be implemented during the immediate recovery from a disaster. Eligible projects include drainage systems, structure elevation, landscape alteration, floodwalls, road elevation, property acquisition, development of mitigation plans, development of land-use regulations, and more. Governments and selected non-profits are eligible. HMGP covers up to 75% of costs. Note that there are 10 projects that have been funded by this source following DR-1807 and are included in the 2011 Hazard Mitigation Strategy.

- FEMA Flood Mitigation Assistance Program: The Flood Mitigation Assistance (FMA) program's goal is to reduce or eliminate claims under the NFIP. FMA provides funding to assist States and NFIP-participating communities in implementing plans, projects, and programs to reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insurable under the NFIP. This includes acquisition, elevation, flood mitigation, and more. FMA covers up to 75% of costs. For those States and Territories with an approved SRL strategy in the SHMP, the Federal cost share may be increased.
- FEMA Public Assistance: The PA Program provides supplemental Federal disaster grant assistance under Section 406 of the Stafford Act for the mitigation of disaster-damaged, publicly owned facilities and the facilities of certain private, non-profit organizations. Eligible projects include: elevation, flood proofing or relocation of damaged elements during the repair process, and more. PA covers up to 75% of costs, though an increased Federal share can be requested.
- FEMA Unmet Needs: FEMA's Unmet Needs program is authorized by Congress for specific major disaster related events where the needs of the citizens are not met through existing services. The Unmet Needs program is implemented only when deemed appropriate by Congress. Project eligibility is also determined by Congress, but will usually conform to the existing criteria under the HMGP unless specifically waived.

As noted in Section 2.4, the Biggert-Waters Flood Insurance Reform Act of 2012 eliminated the Repetitive Flood Claims and Severe Repetitive loss grant programs. To encourage efforts by states and local jurisdictions, FEMA has changed the cost-share requirements to allow more Federal funds for properties with repetitive flood claims and severe loss properties. Implementing flood mitigation measures for severe repetitive loss properties would be funded by FEMA at 100 percent; and, funding for implementation of flood mitigation measures for repetitive loss properties would be funded at 90 percent. Given the stark economic reality in the USVI over the past six years, focusing the mitigation strategy on addressing repetitive losses is the best option for the USVI Territory.

Several other aspects of the HMA Unified Guidance that are relevant to Federal funding of hazard mitigation in the USVI include:

- Advance Assistance: This funding option applies only to HMGP. Up to 25 percent of the HMGP Ceiling with a cap of $10 million can be used to obtain data to prioritize, select, and develop complete HMGP applications. This is not automatic and the Territory would have to request this option by submitting a brief request for Advance Assistance. This option will

be very important for the Territory, as there will be limitations on the amount of pre-disaster planning for long-term recovery that the USVI can undertake under the current economic climate.

- Planning Grants: There is no longer the restriction that a planning grant can only be awarded not more than once every 5 years to a State or Territory.
- Five Percent Initiative: Up to 5 percent of the total HMGP funds may be set aside by the Grantee to pay for a range of activities that are difficult to evaluate against traditional cost effectiveness criteria. There would have to be a reasonable expectation that future damages or loss of life would be reduced or prevented should the 5 percent Initiative be undertaken. VITEMA intends to take full advantage of the 5 Percent Initiative because of the problems associated with a sufficient historical database of disaster-related damages needed to conduct benefit/cost analysis.

Part II of the HMA Unified Guidance discusses "frontloading" HMA program requirements by States or Territories. This new guidance encourages Applicants to conduct adequate scoping and project development prior to submitting HMGP, PDM or FMA grant applications. Scoping would involve conceptualizing project alternatives that would also meet the purpose and need of the proposed project. By evaluating technical feasibility, cost effectiveness and environmental or cultural resource considerations early in project formalization, it will facilitate, expedite and lead to more successful implementation of hazard mitigation projects.

3.3.2 GOVERNMENT OF THE VIRGIN ISLANDS FUNDING

Although the US economy has seen slow but sustained growth from 2011 through 2014, the USVI suffered a major economic impact when the HOVENSA LLC petroleum refinery on St. Croix closed in January of 2012. Over 2,000 well-paid, full-time positions were lost; 1,200 refinery positions, more than half of the manufacturing sector, along with 950 full-time jobs associated with subcontractors. For the years when the refinery was in operation, the USVI economy was somewhat immune to the oscillations of the US economy; however with its closure, the USVI will be more subject to the mainland economic cycles. Future economic growth in the USVI is quite uncertain and the financial challenges are expected continue to persist for the next three year phase.

From FY2008 to FY2010, the Government of the Virgin Islands has experienced asymmetrical oscillations in its fiscal sector. In the 2011 State of the Territory Address, the Territorial Governor discussed the 30% decrease in General Funds revenues each year in 2009 and 2010, which was only partially offset by the $288 million in Recovery Act spending that the Territory received during the same time period. During a three-year period from 2008 through 2010, the General Fund experienced a $660 million budget shortfall, which is the equivalent of almost 60% of the government salaries in the Territory during the same time period. Governor deJongh went on to discuss his belief that the Territory is at a "tipping point," and that serious reductions in government spending must occur; he indicated his position that a 30% reduction was the bare bones reduction to begin to address this deficiency.

The precarious financial position portends that, in all likelihood, the US Virgin Islands government would face a difficult challenge in implementing mitigation actions with Territorial cost share requirements of greater than 10 percent (many FEMA grant programs are 75% Federal / 25% State or Local; USACE programs for structural flood control projects are often set at 50% Federal / 50% State or Local).

Under these present and anticipated near term financial conditions for the Government of the Virgin Islands, adequate operating budgets to implement hazard mitigation actions will be severely constrained. In the case of retrofitting critical facilities or undertaking structural mitigation projects, the financial reality over the next three to five years, implies a heavy reliance on Federal funding sources, and pursuing hazard mitigation program opportunities where a lower cost share for the USVI Government are available . However, many of the programmatic mitigation actions (Territory-wide) recommended in the 2011 Plan and again in this Plan Update, can be implemented at low cost to the US Virgin Islands government and could achieve substantial returns in a more sustainable and resilient future for the islands.

Many of the refinements to development regulations and improved administrative procedures proposed can be implemented through existing or augmented annual departmental operating budgets. These revisions and refinements are expected to significantly increase the ability of the Territory to effectively mitigate known hazards.

3.3.3 OTHER FUNDING SOURCES

Given the current and anticipated financial position of the US Virgin Islands, departments charged with implementing “soft or hard” mitigation actions will need to be creative and innovative in seeking adequate funding. Some innovative approaches that have proved fruitful elsewhere include:

- Encouraging the active participation of the private sector, pursuing non-profit funding opportunities (such as private foundations),
- Seeking other Federal grants not related to comprehensive emergency management (CDBG, Economic Development Administration, USDA rural development grants, etc.),
- Strengthening partnerships with UVI, the Chamber of Commerce, voluntary relief and other civic organizations, and
- Continued outreach to construction, tourism and insurance sectors of the economy.

3.4 ANALYSIS AND EVALUATION OF THE EFFECTIVENESS OF MITIGATION PROGRAMS AND ACTIVITIES

Many of the general observations of this Plan Update are consistent with those of the previous plan development. The findings of the capability assessment interviews fall into three broad categories: (1) funding – local fiscal constraints; (2) inadequate staffing; and, (3) need to enhance technical capabilities. The issue of having an adequate annual operating budget to implement specific department mandates, let alone mitigation actions or programs, was raised as a critical concern by many departmental representatives interviewed.

The section below outlines mitigation program or project activities, Virgin Islands Department, Agency and Authority responsibilities for implementation of hazard mitigation and staffing and technical capability concerns.

3.4.1 ADMINISTRATIVE CAPABILITIES TO IMPLEMENT HAZARD MITIGATION

To fully assess the Virgin Islands capabilities to support hazard mitigation, VITEMA completed a history of the last ten years. The data is broken out to document mitigation activity since the 2005 Plan. All Mitigation Activities funded by HMGP, FMA and PDM were reviewed.

3.4.1.1 Pre-Disaster Grant Administration

The process for identify the history of FMA and PDM mitigation projects in the USVI over the past ten years.

TABLE 3.2 ***Flood Mitigation Assistance and Pre-Disaster Mitigation Grant Projects in the US Virgin Islands***

FISCAL YEAR	Grant Number	Grantee/ Sub-Grantee	Project Title	Federal	Non-Federal	Total Project
Flood Mitigation Assistance Program						
FY 2004	FMA-PJ-02-VI-2004 (0)	VITEMA/DOE	**Central High Flood Mitigation Project** The project consist of the construction and installation of new 3'0"x3'0" concrete manholes, cut and remove sections of the existing drain pipes to accommodate for the new inlet manholes.	$115,000.00	$0.00	$115,000.00
FY 2004	FMA-TA-02-VI-2004 (0)	VITEMA	**St. Croix Central High School Flood Mitigation Project** Technical Assistance to manage the FMA to implemented through the VITEMA office to ensure the accuracy of the project	$15,000.00	$0.00	$15,000.00
FY 2005	FMA-PJ-02-VI-2005 (0)	VITEMA/DPW	**St. Andrews Episcopal Church Flood Mitigation Project - St. Thomas, USVI** Minimize repetitive flooding of St. Andrews Episcopal Church and surrounding community. It will increase the intake capacity of the existing box culver adjacent to the church and along Sixth Street near the intersection of F	$115,900.00	$0.00	$115,900.00

FISCAL YEAR	Grant Number	Grantee/ Sub-Grantee	Project Title	Federal	Non-Federal	Total Project
Pre-Disaster Mitigation Program						
FY 2006	PDMC-PJ-02-VI-2006-001 (0)	VITEMA/WAPA	**Christiansted Electrical Distribution System Mitigation Project** Mitigate and restore the electrical distribution system. Bury distribution lines of the feeder (Feeder No. 1) and replace existing pole mounted transformers with pad-mounted transformers.	$2,758,927.51	$920,000.00	$3,678,927.51
FY 2007	PDMC-PL-02-VI-2007-001 (0)	VITEMA/VITEMA	**USVI State Hazard Mitigation Plan Comprehensive Review and Update** VITEMA will be updating its existing multihazard mitigation plan to comply with FEMA's regulation requiring that State Mitigation Plans be updated and submitted to FEMA for approval every 3 years in order to continue eligibility for non-emergency Stafford Act assistance.	$187,500.00	$62,500.00	$250,000.00
FY 2007	PDMC-PJ-02-VI-2007-005	VITEMA/WAPA	**St. Thomas Underground electrical Distribution Mitigate and restore the electrical distribution system. Bury distribution lines of the feeder and replace existing pole mounted transformers with pad-mounted transformers.**	$1,632,469.83	$547,935.98	$2,180,405.81
FY 2007	PDMC-PJ-02-VI-2007-006	VITEMA/WAPA	**Charles Harwood Memorial Hospital Electrical Underground Mitigate and restore the electrical distribution system at hospital by burying distribution lines, etc.**	$407,647.29	$135,882.43	$543,529.72
FY2007	PDMC-PJ-02-VI-2007-007	VITEMA/WAPA	**Christiansted Electrical Distribution System Mitigation Project Phase II Mitigate and restore the electrical distribution system. Bury distribution lines of the feeder and replace existing pole mounted transformers with pad-mounted transformers.**	$2,381,856.59	$793,952.20	$3,175,808.79

3.4.1.2 Post-Disaster Project Administration

The process for identify the history of HMGP mitigation projects in the USVI over the past ten years.

TABLE 3.3 ***Hazard Mitigation Grant Program Projects in the US Virgin Islands***

Disaster Number	Applicant/Project Name	Total Project Cost Estimated	Total Approved Net Eligible Project Cost	Federal Share	Non Federal
1503	**Virgin Islands Department of Education/** Upgrade Existing storm water system to Pearl B. Larsen School in St Croix, VI.	$38,220	$38,220	$37,700	$0.00
1567	**Virgin Islands Department of Education/**Installation of Shutters at the Oliver Benjamin School Shutters in St Thomas. Acquisition and Installation of RE-60 rollup shutters to protect the Benjamin School Cafeteria and Library Storefront.	$113,870	$113,870	$113,870	$0.00
1807	**Department of Property and Procurement/** Hurricane High Impact Windows (STT)	$466,667	$466,667	350,000.25	$116,666.75
1807	**Department of Public works/** Hurricane High Impact Windows (STT)	$146,667	$146,667	$110.000.25	$36,666.75
1807	**Department of Human Services/** Hurricane High Impact Windows (STT)	$192,414	$192,414	$144,310.50	$48,103.50
1807	**Department of Education/** Hurricane High Impact Windows (STT)	$32,467	$32,467	$24,350.35	$8,1116.75
1807	**American Red Cross/** Storm Shutters (STX)	$64,509.33	$64,509.33	$48,382.00	$16,127.33
1807	**Virgin Islands Fire Service (Emilie Henderson)/** Storm Shutters (STX)	$18,467.00	$18,467.00	$13,850.25	$4,616.75
1807	**Virgin Islands Fire Service (Renceliar Gibbs)/** Roll-up Doors (STX)	$22,916.00	$22,916.00	$17,187.00	$5,729.00
1807	**Virgin Islands Port Authority/ Henry E. Rohlsen/** Fabric Shutter System (STX)	$236,044.00	$236,044.00	$177,033.00	$59,011.00
1807	**Department of Health (DeCastro Clinic)/**Storm Shutters (STJ)	$21,305.33	$21,305.33	$15,979.00	$5,326.33
1939	**Water and Power Authority (WAPA)**Wind Retrofitting of the Pad Mounted Transformers on St Croix (Replacing large pole mounted transformers banks with pad mounted transformers at local elementary schools in STX.	**$315,000**	**$315,000**	**$236,250**	**$78,750**
1939	**VI Fire Service** Roll Up Doors at Emile Henderson Fire Station	**$43,509**	**$43,509**	**$32,632**	**$10,877**
1948	**Water and Power Authority (WAPA)**Wind retrofitting of Pad Mounted Transformers	**$307,052**	**$307,052**	**$230,289**	**$76,763**
1949	**Water and Power Authority (WAPA)**Replacement of three phase transclosures with pad mounted transformers, St. Croix	**$499,255**	**$499,255**	**$374,441**	**$124,814**

3.4.2US VIRGIN ISLANDS DEPARTMENTS, AGENCIES AND AUTHORITIES

As part of a study entitled "*Mitigating the Impact of Natural Hazards in the US Virgin Islands*" (IRF, 1995), the major agencies and utilities of the US Virgin Islands responded to a questionnaire regarding their perceived role in hazard planning and mitigation activities. The following matrix is still valid as the Government portfolio and responsibilities of agencies have not changed since the 2005 Plan.

TABLE 3.4 ***Primary and Secondary Mitigation Responsibilities of Agencies in the US Virgin Islands***

	VITEMA	DPNR	DPW	Fire Service	Police	Tourism	OMB	P&P	Port Authority	WAPA
Planning / Management Issues										
Acquisition		S					S	P		
Location of Public Buildings		S								
Warning Systems	P			P	P					
Flood / Hazard Insurance		P								
Disaster Loans and Grants						S	S			
Education / Public Information	P	S				S		S		
Demarcation of Hazard Areas	S	P		S						
Building / Health Code Revisions			P							
Inspection Programs		P	P	S						
Floodplain Easements		P	P					P		
Floodplain Regulation		P								
Hazard Risk Assessment	S			S				P		
Development Restrictions		P								
Hazard Disclosure Regulation		S		P				S		
Zoning Regulations		P								
Wetland Regulations		P								
Acquisition of Development Rights		P					S	P		
Areas of Particular Concern		P								
Open Space Planning		P								
Relocation			P							
Special Fees and Taxes		S					S	S		
Hazard Monitoring	P	S	P	P				S	P	P

Flood Proofing			P					P		
Preparedness Planning	P	S	P	P		S	S			P
Structural Issues										
Flood Proofing, Gut Maintenance										
Preparedness Planning	P	P								
Stormwater Systems			P							
Modify Structures			P					P		P
Breakwaters, Bulkheads, etc.		S						S	P	
Shore Protection Measures		S						S	S	
On-Site Detention / Dams		S	P					S		
Channel Modifications / Culverts		S	P					S		

Legend

P = Perceived primary responsibility
S = Perceived secondary responsibility

It may not always be clear which agency is responsible for taking the lead role, and which department exists under, or works closely with, which agency. The following shows the relationship between Departments and Agencies:

US Virgin Islands Departments and Agencies

- Virgin Islands Territorial Emergency Management Agency (VITEMA)
- Department of Planning and Natural Resources (DPNR), including the Divisions of Permits (DOP) and Subdivisions; Coastal Zone Management; Environmental Protection; and Fish and Wildlife.
- Department of Agriculture
- Department of Education
- Department of Public Works
- Office of Management and Budget

US Virgin Islands Committees

- Hazard Mitigation Monitoring and Evaluation Committee
- Hazard Mitigation Committees
- Coastal Zone Management Commission Committees
- Non-Point Source Pollution Steering Committee

University of the Virgin Islands (UVI) Departments

- UVI Cooperative Extension Service
- UVI Center for Marine and Environmental Studies
- Virgin Islands Conservation Data Center of the Eastern Caribbean Center of UVI
- Water Resources Research Institute

As a result, it is evident that several departments, agencies and authorities in the US Virgin Islands continue to have existing and potential roles in the implementation of the updated 2014 Virgin Islands Territorial Hazard Mitigation Plan.

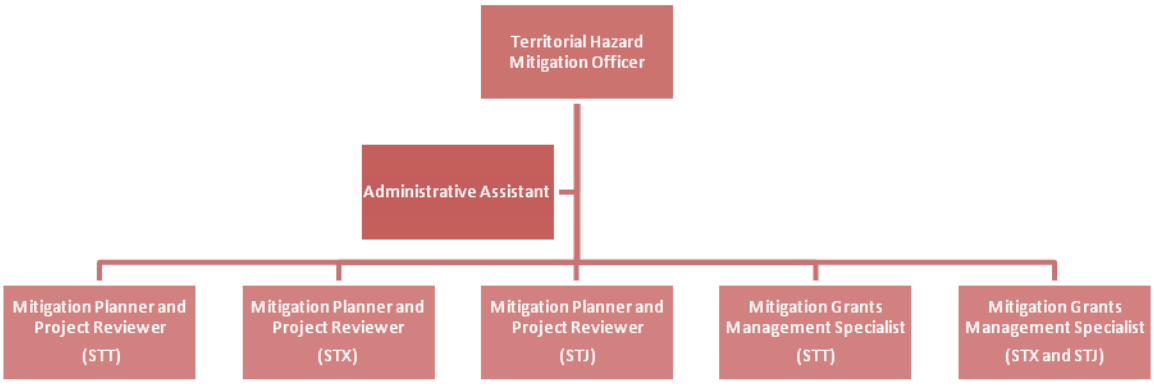
3.4.3 STAFFING

As previously stated, VITEMA, DPNR and DPW are the key governmental agencies that have the primary responsibility for the development and implementation of Hazard Mitigation in the Territory. This is particularly true for Floodplain Management, Environmental Planning and Permitting, Building Code Enforcement, Coastal Zone Management, and Capital Improvement Projects.

While each of these agencies is tasked with the success of territorial hazard mitigation, each agency presently is overwhelmed with the implementation of its core program or department mandates. Faced with the budgetary constraints of the central government and the uncertainty future general revenues, each of these agencies has need for additional staffing to be fully able to address the concerns of Hazard Mitigation. Each agency has numerous unfilled positions making full compliance with the program mandates almost untenable. The lack of essential personnel and insufficient experience exacerbates both compliance and enforcement. The problem is most critical in DPNR, which oversees the divisions of Coastal Zone Management, Permits and Subdivisions, Fish and Wildlife and Environmental Protection.

This situation is likely to persist throughout the life of this revision period. Even though each agency is insufficiently staffed, each agency, as well as the administration of the central government, have the dedication to, and the concern for, the mandates of the Virgin Island Territorial Hazard Mitigation Plan and will actively pursue its implementation.

For VITEMA, consideration should be given to increasing the Mitigation Planning staff structure. The following organizational chart shows, as suggested in the previous Plan Update (2011), to be one possible way staff could be increased and organized to better manage the hazard mitigation planning and project needs of the Territory.



For DPNR, a serious need for qualified GIS staff exists, which will allow for a more thorough and more effective permitting process. Since 2011, all inspectors will be certified by the International

Code Council and will be required to maintain that certification through the completion of CEUs. This is expected to result in a better trained, better qualified workforce. Serious consideration is also being given to increasing the number of Certified Floodplain Managers (CFMs) in the DPNR, as this will also result is better floodplain management throughout the Territory.

3.4.4 TECHNICAL CAPACITY

The evaluation for this Plan Update highlighted the urgent need for data collection and management of hazard information. Currently there are very limited technical capabilities in the Territory.

VITEMA has limited technical data management capabilities. Most critical, is the need for archiving and managing data related to hazards and/or hazard mitigation programs. VITEMA presently does not have a dedicated staff person for the collection and archiving hazard plans or studies (i.e. hurricane plans, earthquake plans, riverine and coastal flood plans). The collection of such information would facilitate a more thorough assessment of the hazards such as the location of events, previous occurrences within the Territory, and facilitate a better prediction of probability of future events. This would also facilitate a more comprehensive assessment of hazards and risk.

The technical capabilities for the implementation of hazard mitigation programs and plans also remain weak. While VITEMA has maintained its capabilities for the implementation of hazard mitigation programs and plans since the 2011 Plan; most of the staff are relatively new and have limited experience in hazard mitigation. For many, the most recent disaster declaration is their first real exposure to hazard mitigation issues, programs and plans. VITEMA staff, therefore, must continue to require extensive training in hazard mitigation concepts (i.e. flood plain management, benefit-cost analysis, etc.) as well as hazard mitigation grant support (i.e. grant writing, project and application development and review, accounting and financial reporting, etc.).

3.5 SUMMARY AND RECOMMENDATIONS

This section points the way to specific recommendations to be included in the mitigation strategy: The first table relates Territorial plans / programs / regulations to the relevant IFR requirements and assesses effectiveness in supporting hazard mitigation. The second table provides a summary of important “gaps” in the Territory’s capabilities and recommendations to address the gaps.

3.5.1 REGULATORY COMPLIANCE WITH DMA 2000

Section 3.1 identified the basic requirements of the IFR for Capability Assessments. Key components of those requirements ask to what extent the Territory’s policies, programs and capabilities support:

- Pre-disaster hazard mitigation;
- Post-disaster hazard mitigation; and
- Regulation of development in hazard-prone areas

The findings of the evaluation for this Plan Update illustrate that the US Virgin Islands' capabilities to address hazard mitigation has not changed since the development of the 2011 Plan. Many of the requisite tools are currently in place or are continuing to evolve. Therefore, the Virgin Islands have not reached its full potential to support hazard mitigation.

TABLE 3.5 ***Regulatory Compliance with DMA 2000***

Description	Pre-Disaster Hazard Mitigation	Post-Disaster Hazard Mitigation	Regulation Development
General Plans and Policies			
Coastal Zone Management Plan	1	1	1
Comprehensive Land Use Planning	1	1	1
Pre-Disaster Hazard Mitigation Plans, Rules and Regulations			
National Floodplain Insurance Program	1	0	1
Multi-Hazard Flood Map Modernization Program	1	0	1
US Virgin Islands Flood Mitigation Plan	1	1	1
Flood Damage Prevention Rules	1	0	1
Coastal Zone Management Permitting	1	0	1
Areas of Particular Concern	1	0	1
Coastal Barrier Protection System	1	1	1
Zoning	1	0	1
Subdivision Regulations	1	0	1
Building Codes	1	1	0
Post-Disaster Hazard Mitigation Plans, Rules and Regulations			
Emergency Management Council	1	2	0
US Virgin Islands Flood Mitigation Plan	1	1	1
Hazard Mitigation Grant Administrative Plan	0	1	0
Emergency Operations Plan	0	1	0
Hurricane Evacuation Plan(s)	1	0	0
Other Related Programs			
Unified Watershed Assessment and Restoration Priorities Program	1	1	1
Non-Point Pollution Control Program	1	1	1
Sediment Reduction Program	1	1	1
Protection of Endangered Species	1	1	1

Legend

0 = No potential relationship
1 = Potential exists to support activity but is not fully realized
2 = Supports activity to full potential of the plan, program or policy

3.5.2 SPECIFIC RECOMMENDATIONS

Table 3.6 was included in the 2011 Plan and has been updated, where appropriate. It summarizes the recommendations (organized according to the major categories) that can help continue the process of making hazard mitigation more integrated into the day-to-day operations and long-range planning efforts of the US Virgin Islands government.

TABLE 3.6 ***Recommendations***

Description	Recommendations for Addressing Issues Identified in Capability Assessment	Implemented in Previous Plan Update Cycle
General Plans and Policies, including: ▪ Coastal Zone Management Plan ▪ Completion and adoption of Subdivision and Zoning Code Revisions	✓ Incorporate hazard mitigation directly into existing and proposed general purpose plans in the US Virgin Islands to increase the "profile" of hazard mitigation and ensure incorporation of hazard mitigation in the resulting and related rules and regulations ✓ Institutionalize hazard mitigation into Territorial public investments	✓ Revision of Subdivision and Zoning Code Revisions underway, with help from technical experts
Pre-Disaster Hazard Mitigation Plans, Rules and Regulations, including: ▪ National Floodplain Insurance Program ▪ Flood Damage Prevention Rules ▪ Coastal Zone Management Permitting ▪ Areas of Particular Concern ▪ Coastal Barrier Protection System ▪ Zoning ▪ Subdivision Regulations ▪ Building Codes	✓ Decrease numbers of repetitive loss properties ✓ Continue to increase participation in the NFIP ✓ Avoid development in hazard prone areas ✓ Increase freeboard requirements for development that is approved in flood prone areas ✓ Require buildable areas in lots outside of Special Flood Hazard Areas ✓ Extend CZM permit requirements to all the islands ✓ Require major permit application procedures for subdivision (island wide), i.e., remove Tier 1 and Tier 2 distinctions to the extent possible ✓ If tiered system remains, revise Tier 1 boundaries to included regulated natural features such as floodplains, wetlands, salt ponds, mean high tide, and associated buffers. ✓ Increase hazard assessment aspects of EAR process ✓ Continue APC management planning ✓ Assess development suitability in terms of hazard vulnerability as a first step in revising zoning designations to better reflect risk and exposure ✓ Strengthen planning and enforcement	✓ All building inspectors are now required to be certified by ICC, and are required to maintain that certification

Description	Recommendations for Addressing Issues Identified in Capability Assessment	Implemented in Previous Plan Update Cycle
	capabilities through increased staffing and training ✓ Strengthen data collection and management capabilities, to create database and sources for use in project development and justification	
Post-Disaster Hazard Mitigation Plans, Rules and Regulations, including ▪ Emergency Management Council ▪ Hazard Mitigation Grant Administrative Plan ▪ Emergency Operations Plan ▪ Hurricane Evacuation Plan(s)	✓ Improved management of federal grants ✓ Increase funding for matching federal grants ✓ Integrate hazard mitigation and sustainability considerations into post-disaster recovery process	✓ HMGP sub-grants have been made available in the aftermath of 3 Presidential declarations in 2010
Other Related Programs, including: ▪ Unified Watershed Assessment & Restoration Priorities ▪ Non-Point Pollution Control Program ▪ Sediment Reduction Program ▪ Protection of Endangered Species	✓ Extend watershed approach from related programs to hazard mitigation and development review process.	

The capability assessment evaluated both the "written word" on mitigation (i.e. the adopted or proposed legislation, regulations, plans and policies in the US Virgin Islands) and the administrative capabilities of US Virgin Islands agencies, departments and authorities.

In summary, many of the necessary policies, regulations and programs are already in place. Likewise, the Government of the Virgin Islands can draw upon the existing expertise in a number of key departments charged with implementing many of the mitigations recommended in this Plan.

To provide support for Hazard mitigation planning the US Virgin Islands Government should try to augment existing resources and agency operating budgets to make a significant impact over the next five years in creating a more sustainable future for the Territory.